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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,558	08/25/2003	Jingxian Wu	MERL-1489	5152

7590 12/22/2005

Patent Department
Mitsubishi Electric Research Laboratories, Inc.
201 Broadway
Cambridge, MA 02139

EXAMINER	
HAROON, ADEEL	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/648,558	WU ET AL.	
	Examiner	Art Unit	
	Adeel Haroon	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,8,10 and 11* is/are rejected.

7)☒ Claim(s) *5,7 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-4, 8, 10, and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Hottinen et al. (U.S. 6,754,286).

With respect to claims 1 and 11, Hottinen et al. disclose a method and system for increasing transmit diversity gain in a wireless communication system including a transmitter, element number 10, with a plurality of antennas, element numbers A1 and

A2, and a receiver, element number 20, with one antenna in figure 5 (Column 9, line 45 – Column 10, line 2). Hottinen et al. disclose measuring the phase of each of the a plurality of signal received by the receiver and determining the phase difference of the signals, thus one on signal is made a reference signal since the phase difference is relative between the signals (Column 11, lines 24-29). Hottinen et al. teach determining, independently for each other signal, feedback information indicating a required rotation of each other signal so that a phase of both signal are within an identical quadrant, within ninety degrees, and sending the feedback information to the transmitter (Column 11, lines 51-55). Hottinen et al. also disclose phase rotating, in the transmitter, each other signal according to the corresponding feedback information to produce a rotated signal and transmitting the rotated signals to the receiver (Column 11, lines 35-41).

With respect to claim 2, since measuring the phase difference between the two signals makes one of the signals a reference signal, it is considered selecting that as a reference signal randomly.

With respect to claim 3, Hottinen et al. disclose measuring the power of each of the signals and sending power measurements to the transmitter; therefore making the one with the highest power measurement the reference signals since it has a higher weight (Column 15, lines 44-46).

With respect to claim 4, Hottinen et al. disclose that the feedback information is one bit when there are two antennas (Column 11, lines 20-22).

With respect to claim 8, since Hottinen et al. take the difference between the phases and puts more weight on the signal with the highest power measurement (column 15, lines 44-46), it results in normalizing the quadrant of the reference signal, the signal with the highest power measurement, because it has a higher weight.

With respect to claim 10, Hottinen et al. disclose that the receiver is a cellular telephone (column 1, lines 4-7).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hottinen et al. (U.S. 6,754,286).

With respect to claim 6, the method of Hottinen et al. is described above in the discussion of claim 1. Hottinen et al. does not expressly disclose that two bits are needed for each other signal when there are more than two antennas. However, since Hottinen et al. teach that the feedback information is one bit when there are two antennas (Column 11, lines 20-22), it would be obvious to one of ordinary skill in the art

at the time of the applicant's invention that when there are more than two antennas that one more bit is needed for identification purposes thus having two bits of feedback information for each other signal in order to have more antennas in the transmitter accordingly adding more gain to the system.

Allowable Subject Matter

5. Claims 5, 7, and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hoshino et al. (U.S. 2002/0186785) disclose transmit diversity gain system that has phase feedback information. Kim et al. (U.S. 6,892,059) disclose a closed loop transmit diversity gain system that uses phase feedback information from the mobile station. Das et al. (U.S. 2003/0148738) disclose a transmit diversity gain system using a pilot signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adeel Haroon whose telephone number is (571) 272-

7405. The examiner can normally be reached on Monday thru Friday, 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AH
12/9/05